sidence of inflammatory trouble about the joints. I believe the most valuable adjunct to the treatment of these cases to be the passive hyperemia of Bier. It has appeared to exert a marked influence on the pain in the joints and to have assisted in the absorption of joint exudates.

THE RELATION OF RAT LEPROSY TO HUMAN LEPROSY.*

(With an Exhibit of Gross and Microscopic Specimens.)

By WM. B. WHERRY, M. D., San Francisco.

It seemed worth while, in connection with Doctor Clark's exhibit of cases of human leprosy, to show you some specimens from a very closely related, if not identical, disease which occurs in the rat. Leprosy in rats has been known for a number of years and has been recorded in England, Southern Russia, Roumania, India, and the region about San Francisco Bay.

The disease has usually been found in connection with the examination of large numbers of rats for plague and no doubt further investigation will show that it is quite prevalent among rats all over the world. It is characterized by a granulomatous proliferation of the subcutaneous tissues, leading to a marked thickening of the skin, alopecia, and ulceration. In some cases the peripheral nerves are involved, resulting in the loss of fingers and toes or the tail. Acid-proof bacilli resembling those found in human leprosy occur in enormous numbers in the affected tissues. Upon histological examination the changes in the skin closely resemble those found in human leprosy. The disease may be transmitted by inoculation from rat to rat but not to guinea pigs, rabbits nor monkeys. Such inoculated rats develop the disease very slowly and it is only after several months have elapsed that definite signs of the disease are found.

This disease is of particular interest because it furnishes material for experiments of a comparative nature, whereby we may gain some idea as to how human leprosy is transmitted. It widens the field for research on such problems as the early diagnosis of leprosy—the production of immunity to leprosy—and the treatment of leprosy.

It is generally believed that the bacillus of rat leprosy has become specialized in the rat and differs from the human leprosy bacillus to about the same degree that bovine tubercle bacilli differ from human tubercle bacilli. The recent work of Mezincescu (*Comp. Rend. Soc. Biol.*, 1909, 66, 56), would seem to support this idea. This investigator, working in Roumania, tested the ability of rat lepra bacilli to fix complement according to the Bordet-Gengou reaction. Of the sera from twenty-four cases of human leprosy (tubercular, mixed, and anesthetic cases) twenty gave complete fixation; two slow fixation; and with two fixation was negative. He controlled a certain number of these cases by tests with extracts of the tubercle bacillus and paratubercle bacilli (Timothy-Mist) with entirely negative results. He believes that his observations point to a very close relation between rat leprosy and human leprosy. (A leper rat caught last Saturday at 21st and Broadway, Oakland, is on exhibition. Also a section of skin from a leper rat showing the enormous numbers of acid-proof bacilli present in this disease.)

* Read at the Thirty-ninth Annual Meeting of the State Society, San Jose, April, 1909.

REPORT OF A CASE OF TRANSIENT CYCLOPLEGIA DUE TO GLYCOSURIA.*

By W. HUMES ROBERTS, M. D., Pasadena.

Paralysis of accommodation, due to diabetes, is sufficiently rare to warrant the report of the following case:

Mr. W., aged 51, first consulted me March 30, 1908, concerning a tickling in his throat, which had troubled him for about two weeks. He was coughing a great deal, he felt and looked sick, and he had recently lost flesh.

Examination showed his uvula was thickened and elongated, fauces congested; right cord somewhat immovable, irregular in outline, and reddened near the arytenoid cartilage.

Fearing that a tubercular process might be commencing in his lungs, I advised him to consult a general physician for a physical examination. He placed himself under the care of Dr. Joseph D. Condit. Dr. Condit reported to me that there was no evidence of tuberculosis, but that his urine contained 7% of sugar.

Under appropriate diet, the sugar began to lessen, so that by the 7th of April it was down to 5 5-8%, and his weight, which was 133 pounds, began to increase. By the 29th of April all sugar had disappeared from his urine, and, when last observed by Dr. Condit on the 22nd of July, his weight had increased to 142 pounds.

On the 15th of April, when he had been under Dr. Condit's care for two weeks, his urine showed only ⅜% of sugar. At that time, he came to me again, saying that for a few days past he had been unable to read with his glasses, which had theretofore been perfectly satisfactory, and that he now needed them to see with in the distance. Until he noticed this failure of his glasses for reading, his vision for distance had been perfect; but now he could not see in the distance without the use of his old reading glasses.

I found that he had been using for reading a pair of + sph. 1.75

At that time O. D. V.=6/22.5
O. S. V.=6/15

Manifest examination showed
O. D. + sph. 1.75=6/5
O. S. + sph. 1.75=6/5 1½° esophoria.

For reading at thirteen inches, he required to be added to the above + sph. 2.25.

External examination of the eyes showed everything normal; pupils were of normal size, and they reacted to light and accommodation. Ophthalmoscopic examination showed the media clear and the fundi normal. A test on the following day confirmed this examination, so I ordered the foregoing lenses for him.

On the 18th of May he came in again very much improved in his general health. He said that until within a few days, these last glasses had been perfectly satisfactory; but that now he could not see so clearly in the distance with them, and he found that he had to hold newspapers and books too close to his eyes to read with comfort. His vision with his distance glasses now was only 6/12.

* Read at the Thirty-ninth Annual Meeting of the State Society, San Jose, April, 1909.

Manifest examination showed

O. D. V. 6/15 + sph. 1 =6/5
O. S. V. 6/9 + sph. 0.75=6/5
with + sph. 2.25 added for near,

and these I ordered.

Shortly after this Mr. W. returned to his home in the East. In a letter, dated Feb. 8th of this year, he wrote me that his eyesight was very much better than when he was in Pasadena last year. His accommodation continued to return so that it was necessary for him to go back to the original reading glasses which he was using when he first came to me. A few days before writing to me he had broken his old lenses, and, for a short time, he had made use of the ones I had last given him, which brought his near point within eight or ten inches of his eyes. His general health has been excellent, though he is still very careful in his diet.

Dr. Geo. M. Gould, in an article on "The Refraction Changes Dependent Upon Glycosuria," [1] has collected twenty-two cases in which changes have occurred. These he has arranged in three groups: the first consists of six cases, and shows an increase of myopia; the second is made up of eight cases in which hyperopia is diminished, which is a change similar in character to those in the first; the third is composed of eight cases in which an increase of hyperopia is noted.

We are not concerned with the first and second groups; but in the third group we are interested, for the case just reported seems to belong to this class. In all eight cases, an increase of hyperopia is noted; and, in seven of these eight cases, it disappears, returning to the original amount with the subsidence of the sugar.

As an increase of myopia is the most common refraction change occurring in diabetes, and as fourteen of the twenty-two cases reported in Dr. Gould's article had such changes, Dr. Gould is inclined to belittle the findings of the men who report the eight cases of increased hyperopia, claiming that the observations are unreliable, inasmuch as a mydriatic was used in but one case, that of a boy of seventeen. The ages of five of the remaining patients are 40, 55, 68, 51 and 53, in each of whom there could have been but slight latent hyperopia. Undoubtedly, in each of these eight cases, there was a paralysis of accommodation; although such an explanation for the increased hyperopia does not seem to have occurred to Dr. Gould, who says: "When eight reporters find such an illogical, if not impossible, reversal of the natural consequences as testified to by fourteen, it behooves us to doubt the accuracy of the oculists' tests and reports, rather than to indulge a belief in the inherently improbable and impossible."

Delord and Revel [2] report a case, very similar to mine, in a woman 48 years of age. She had a sudden bilateral paralysis of accommodation, without involvement of the sphincter pupillæ. With the disappearance of the sugar from her urine, she regained her accommodation. With Schmidt-Rimpler, these authors agree that cycloplegia from diabetes is rare, which is contrary to the opinion held by Wecker and Landolt.

Of particular interest to me in the history of my patient, was the fact that his cycloplegia did not appear until after his health had begun to improve, when the sugar had decreased from 7% to about ½%, showing that possibly a similar toxin to that causing a post-diphtheritic paralysis, caused the lesion.

The prognosis in diabetic cycloplegia seems very favorable, as, in the majority of cases, under proper dieting, the sugar can be eliminated from the urine, and the ciliary muscle regains its function.

REFERENCES:

1. Gould. The Refraction—Changes Dependent upon Glycosuria. Medical Record, April 20, 1907.
2. Delord & Revel. Paralysis of the accommodation in diabetes. Archives d'opthalmologie, XXVII, p. 764.

Discussion.

Doctor F. H. Rogers, Long Beach: The paper presented is one of a little more than usual interest to me and it seems that the rarity of cycloplegia and its importance merits more than passing notice. I cannot recite any considerable number of cases of this kind and I regret, having met with one case which perhaps had some points in common with the one just reported, that I did not take the trouble to replenish my memory as it occurred some years ago. About twelve years ago a case came under my notice. The patient was a woman of perhaps thirty-six years of age, a school teacher, who was riding with a friend in a carriage behind a horse which became frightened by a passing train and ran away. The ladies were thrown out and the teacher was dragged some little distance. She suffered no bodily injury and I was not called to the case until she had largely recovered from the shock. My attention was called to the case as a result of the failure on the part of her glasses, which she had worn for ten years previously, to relieve the symptoms of headache and general refraction, as they had before satisfactorily done. Test made of her refraction showed that she required for perfect vision about twice the amount of correction that she had had before. The new glasses she wore for about three or four months when she returned saying she was obliged to hold the paper too close to her eyes and that her distant vision, which had been good, was becoming worse. Without re-examining I gave her a reduction of about one-half diopter which she wore for three or four months. She then returned again and as a matter of experiment I gave her her old lenses which proved to be entirely satisfactory. I watched the case for two or three years, during which time she wore her original glasses. With our present knowledge of diabetic conditions we know this is a nervous condition not very well understood and we believe that this case while free from diabetic symptoms was one of nervous disturbance of some cause. I thought of hysteria though she was not a subject of hysterical manifestations. The case reported by Doctor Roberts was one of diabetic cycloplegia which of course is very rare, while the one which I mention was a nervous disturbance.

SOCIETY REPORTS

ALAMEDA COUNTY.

At the July meeting of the Alameda County Society a most interesting symposium on tuberculosis was the order of the evening. Dr. von Adelung discussed tuberculins and Dr. Clark the subject of genito-urinary tuberculosis. Dr. Rixford of San Francisco spoke on bone tuberculosis, and Dr. Cooper of San Francisco on the use of X-ray and the interpretation of plates. The papers are to appear in an early issue of the Journal. The following preamble and resolution were adopted:

Whereas, Dr. Philip Mills Jones, Secretary of the State Society, in voluntarily reducing his own salary